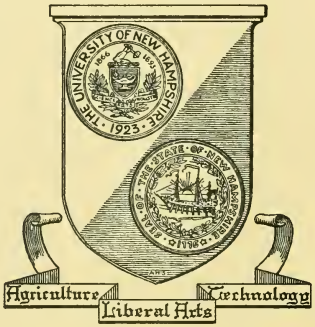
SHOUT
SHARE
IT

Library of



The University
of
New Hampshire

BULLETIN 385 SEPTEMBER, 1950

THE UNIVERSITY OF NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION
Department of Agricultural and Biological Chemistry

Inspection of Commercial Fertilizers

Made for the
STATE DEPARTMENT OF AGRICULTURE

H. A. DAVIS, R. E. KRAMER, and M. A. BRUCE

THE UNIVERSITY OF NEW HAMPSHIRE
DURHAM, N. H.

INSPECTION OF COMMERCIAL FERTILIZERS

Made for the

State Department of Agriculture

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Perley I. Fitts, Commissioner of Agriculture. Mr. George H. Laramie, Fertilizer Control Supervisor, collected samples of 112 brands of mixed fertilizer and fertilizer materials which were offered for sale by dealers or had been delivered to consumers during the year ending June, 1950. The general character of the brands sampled is shown by the following classification:

Complete fertilizer	63
Phosphoric acid and potash	13
Superphosphate	7
Nitrate of soda	2
Ammonium nitrate	2
Ammonium sulphate	2
Muriate of potash	6
Ground bone	4
Milorganite	1
Natural manures	9
Urea	2
Cyanamide	1

THE FERTILIZER LAW

The chief purpose of the official inspection required by the fertilizer law is to protect the consumer against the misbranded products which doubtless would soon appear on the market if the sale of fertilizer was not under state regulation. The purchaser of fertilizer or fertilizer materials should acquaint himself with the full text of the law. He should not accept from the dealer any bag of fertilizer which is not tagged and guaranteed in compliance with the law. If he does so it is at his own risk.

The law governing the guarantees and labeling of commercial fertilizers or fertilizer materials follows:

"Every lot or parcel of commercial fertilizer or fertilizer material sold or offered or exposed for sale within this state shall be accompanied by a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package; the name, brand or trademark under which the fertilizer is sold; the name and address of the manufacturer or importer; the location of the factory; and a chemical analysis stating the minimum percentage of nitrogen, of available prosphoric acid and of water-soluble potash expressed in whole numbers."

"No fertilizer or fertilizer material containing the three essential fertilizing elements, nitrogen, phosphoric acid and potash may be sold or offered for sale if the total minimum plant food nutrients contained therein is less than fourteen per cent by weight, provided however that natural animal and bird manures shall be excepted from the provisions of this section."

Copies of the full text of the law may be obtained from the Fertilizer Control Supervisor, State House, Concord, N. H. Inquiries concerning the law and all

matters relative to the registration of brands should be addressed to his office.

The value of a fertilizer depends mainly upon its content of available plant food, particularly nitrogen, phosphoric acid and potash. To correct certain soil conditions other plant nutrients are included in fertilizers for specific crops. Magnesium and boron are two so-called minor elements or plant foods furnished by some brands of fertilizers for specific cases. Whether or not a fertilizer contains the guaranteed amount of plant food can be determined only by a chemical analysis. For this reason it is considered necessary that each brand of fertilizer offered for sale be officially sampled and analyzed each year. When failure to meet the guarantee is proved by chemical analysis, the prosecution or seizure provisions of the law may be invoked. The purchaser's refusal to buy a fertilizer which does not conform to the law will not only assist in the enforcement of the law but will at the same time insure him the protection of the law.

USE OF COMMERCIAL FERTILIZERS

It is not within the scope of this bulletin to make recommendations regarding the use of commercial fertilizers. The Department of Agronomy and the Department of Agricultural and Biological Chemistry of the University of New Hampshire Agricultural Experiment Station test soils and conduct experimental work with various fertilizer materials on hay and crop land. The Department of Horticulture investigates fertilizer treatments for fruits and vegetables. Much of this work has been published, and is available for free distribution to residents of New Hampshire. Address your request to Mail Service, University of New Hampshire, Durham, New Hampshire.

Sta. Cir. 47 Fertilizer Experiments with Sweet Clover. 12 pp.
Sta. Cir. 50 Fertilizer Experiments with Hay Lands in the Connecticut Valley. 15 pp.
Sta. Cir. 58 Fertilizer Needs of Alfalfa on New Hampshire Soils. 12 pp.
Sta. Cir. 59 Effect of Soil Moisture and Fertilizer Placement on Vitality of the Potato Seed Piece. 11 pp.
Sta. Cir. 61 Fertility Needs of Dairy Farm Crops in the Connecticut Valley. 12 pp.
Sta. Cir. 63 Fertilizers for Sweet Corn. 8 pp.
Sta. Cir. 74 The Response of Clover and Total Forage to Top-Dressing Fertilizers. 12 pp.
Sta. Bull. 306 Experiments with Grass Hay. 24 pp.
Sta. Bull. 320 Pasture Top-Dressing in New Hampshire. 24 pp.
Sta. Bull. 324 Experiment with Potatoes. 38 pp.
Sta. Bull. 362 Purchasing Fertilizers in New Hampshire. 31 pp.
Ext. Cir. 99 Asparagus Culture. 4 pp.
Ext. Cir. 173 Grape Growing in New Hampshire. 11 pp.
Ext. Cir. 210 Purchasing Lime and Fertilizer. 12 pp.
Ext. Cir. 212 Cabbage. 4 pp.
Ext. Cir. 260 Tomatoes for Good Health. 8 pp.
Ext. Cir. 266 Root Crops. 20 pp.
Ext. Cir. 273 The Home Vegetable Garden. 20 pp.
Ext. Cir. 275 Culture of Low-Bush Blueberries. 16 pp.
Ext. Cir. 279 Strawberry Culture. 4 pp.
Ext. Cir. 287 Forage Production and Grain Saving. 8 pp.
Ext. Cir. 289 Cane Fruit Culture. 8 pp.
Ext. Bull. 45 Potato Growing in New Hampshire. 32 pp.
Ext. Bull. 65 Home Fruit Growing in New Hampshire. 16 pp.

While the word fertilizer does not appear in all the above titles, no publication is included which does not discuss the use of fertilizer.

SUGGESTED FERTILIZERS FOR NEW HAMPSHIRE

The following table was developed by the members of the Department of Agronomy and is included in this bulletin with their permission.

Crop	Medium Analysis	Lbs. per Acre	High Analysis	Lbs. per Acre
Grass Seedings[4]	5-10-10	600- 800	8-16-16	400-500
	*4-12-16	400- 500		
Top-Dressing Legumes	0-14-14	600- 800	0-20-20	400-600
Top-Dressing Legumes and Grasses	5-10-10	700- 800	8-16-16	400-500
Top-Dressing Grasses	7- 7- 7	600- 800	10-10-10	400-600
Corn for Grain or Silage	5-10-10	1000-1200	8-16-16	600-800
	*4-12- 4	400- 600		
	*4-12- 8	400- 600		
Millet or Sudan	7- 7- 7	600- 800	10-10-10	400-500
Permanent Pasture	0-14-14[1]	500- 700	0-20-20	300-500
	5-10-10[2]	500- 600	8-16-16	300-500
Potatoes	5-10-10	2500	8-16-16	1600
	4-12-12	2400	5-15-15	2000
Vegetables and Home Gardens	5-10-10	2000	8-16-16	1250
	5- 8- 7	2000		
	5-10- 5	2000		
	*4-12- 4	1000		
Fruit Trees[3]	¼ lb. of common nitrogen carrier for each year of age of tree, up to 10 lbs., or ½ that amount of ammonium nitrate.			

*In addition to manure.

1. Safe application on soil suited for clover.
2. To be used where grazing can be controlled.
3. Boron in form of borax on fruit trees, ½ lb. per tree every three years.
4. 30-35 lbs. of borax per acre prior to seeding alfalfa is advisable.

A. The above recommendations are designed for a guide for use of commercial fertilizers only.

B. Use all the manure every year. IT IS A VALUABLE FERTILIZER.

C. Fortify manure with superphosphate at the rate of at least 1 lb. per animal per day.

D. Hen manure should be used at one-half the rate of cow manure.

E. Manure weighs approximately 45 lbs. per cubic foot.

CONFORMITY TO GUARANTEE

The chemical analyses reported in this bulletin were made by the methods adopted by the Association of Official Agricultural Chemists.

Number of brands analyzed	112
Equalling or exceeding all guarantees	65
Deficient in nitrogen only	19
Deficient in available phosphoric acid only	5
Deficient in potash only	3
Deficient in nitrogen and phosphoric acid	7
Deficient in nitrogen and potash	6
Deficient in phosphoric acid and potash	3
Deficient in nitrogen, phosphoric acid, and potash	4

Five brands were guaranteed to contain magnesium oxide. None failed to meet the guarantee. In general, the overrun in plant food guarantees exceeds the deficiencies when all brands of a manufacturer are included.

Fertilizers are largely mixtures of highly purified chemicals. Segregation of these materials in the bag may be expected. To obtain a truly representative sample of a fertilizer mixture requires careful work. The chemist can accurately determine the nitrogen, phophoric acid, and potash content of the sample sent to the laboratory. If this sample does not correctly represent the larger lot, the analytical work is of no use. The obligation of the fertilizer control program is to see that the manufacturer is supplying the guaranteed amount of plant food to the consumer. For this reason the sample must be drawn and analyzed very carefully so that injustice will not be done to either the consumer or manufacturer.

In the tabulation of the analyses in the following pages deficiencies of one-half per cent or more are shown in red type. The names of the manufacturers are arranged alphabetically. The brand names are listed alphabetically, or numerically by formula, under the manufacturer.

	Sampled in	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Allied Chemical & Dye Inc. New York, New York											
Arcadian American Nitrate of Soda	Manchester	16.00	16.10	....	....	....	....	....	....	....	....
A N L 20.5%	Colebrook	20.50	20.52	....	....	....	....	....	....	....	....
American Cyanamide Company New York, New York											
20.6% Aero Cyanamide	Concord	20.60	20.61	....	....	....	....	....	....	....	....
Aeroprills Ammonium Nitrate	W. Lebanon	33.50	33.56	....	....	....	....	....	....	....	....
American Agricultural Chemical Company North Weymouth, Massachusetts											
Agrinite	Ashland	8.25	8.28	....	....	....	....	....	....	....	....
Pulverized Sheep Manure	Hillsboro	1.25	1.29	1.00	1.12	....	1.01	2.00	2.16	....	....
Bone Meal	Ashland	2.50	2.52	20.00	26.40	....	....	....	....	....	....
Agrico for Corn 3-12-6	Hillsboro	3.00	3.01	....	....	12.00	12.14	6.00	5.72	....	....
Agrico for Seeding Down 3-12-12	Concord	3.00	3.03	....	....	12.00	12.21	12.00	12.48	....	....
Agrico for Corn 4-12-4	Nashua	4.00	3.91	....	....	12.00	10.91	4.00	4.16	....	....
Agrico for New England 5-8-7	Hillsboro	5.00	4.80	....	....	8.00	7.66	7.00	7.04	....	....
Agrico for Gardens 5-10-5	Nashua	5.00	4.89	....	....	10.00	9.23	5.00	5.04	....	....
Agrico for Potatoes 5-10-10	Hillsboro	5.00	4.80	....	....	10.00	9.25	10.00	9.52	....	....
Agrico for Broadleaf Evergreen 6-10-4	Keene	6.00	5.38	....	....	10.00	10.15	4.00	4.16	....	....
Agrico for Lawns, Trees and Shrubs 6-10-4	Plymouth	6.00	5.91	....	....	10.00	9.62	4.00	3.92	....	....
Agrico for Top-Dressing 7-7-7	Hillsboro	7.00	6.73	....	....	7.00	7.01	7.00	6.80	....	....
Agrico Phosphate and Potash 0-14-14	Nashua	....	....	....	....	14.00	13.70	14.00	14.24	....	....
18% Normal Superphosphate	Hillsboro	....	....	....	....	18.00	18.52	....	...	....	....
Apothecaries Hall Company Waterbury, Connecticut											
Liberty Brand 4-12-4	Colebrook	4.00	4.40	....	....	12.00	12.30	4.00	4.48	....	....
Liberty Brand High Grade Market Gardner 5-8-7	Colebrook	4.00	5.10	....	....	8.00	8.60	7.00	7.28	....	....
Liberty Brand 5-10-10	Colebrook	5.00	5.29	....	....	10.00	10.66	10.00	10.80	....	....
Liberty Brand 5-10-10-1.2	Colebrook	5.00	5.29	....	....	10.00	10.13	10.00	11.12	1.20	3.41
Liberty Brand Special for Fruit and Grass 7-7-7	Colebrook	7.00	7.15	....	....	7.00	7.98	7.00	7.52	....	....
Liberty Brand 20% Superphosphate	Colebrook	....	....	....	....	20.00	21.39	....	....	....	....
Liberty Brand 60% Muriate of Potash	Colebrook	....	....	....	....	....	....	60.00	60.42	....	....
Armour Fertilizer Works Carteret, New Jersey											
Armour's Bone Meal	Keene	2.47	2.55	23.00	26.30	....	....	....	....	....	....

	Sampled in	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Armour's Big Crop Fertilizer 4-12-8	Concord	4.00	4.12	....	....	12.00	12.02	8.00	8.08	....	....
Armour's Big Crop Fertilizer 5-8-7	Keene	5.00	4.81	....	....	8.00	8.72	7.00	7.20	....	....
Armour's Vertagreen Plant Food 5-10-5	Keene	5.00	5.30	....	....	10.00	10.38	5.00	5.20	....	....
Armour's Big Crop Fertilizer 5-10-10	Keene	5.00	5.04	....	....	10.00	10.21	10.00	9.44	....	....
Armour's Big Crop Fertilizer 7-7-7	Keene	7.00	7.01	....	....	7.00	7.28	7.00	7.12	....	....
Armour's Big Crop 0-14-14	Keene	....	....	....	....	14.00	13.40	14.00	14.56	....	....
Armour's Big Crop Superphosphate 20%	Keene	....	....	....	....	20.00	21.87	....	....	....	....
Armour's Muriate of Potash	Keene	....	....	....	....	....	....	50.00	51.66	....	....
Canada Packers Montreal, Canada											
Shur-Gain 2- 8-16	Colebrook	2.00	1.46	....	....	8.00	9.87	16.00	19.36	....	....
Shur-Gain 5-10-10	Colebrook	5.00	4.67	....	....	10.00	10.83	10.00	9.80	....	....
Chilian Nitrate Sales Corp. New York, New York											
Chilian Nitrate of Soda	Ashland	16.00	16.03	....	....	....	....	....	....	....	....
Consolidated Rendering Co. Boston, Massachusetts											
Sulphate of Ammonia	Concord	20.50	20.84	....	....	....	....	....	....	....	....
Corenco Sheep Manure 2-1-2	Nashua	2.00	1.94	1.00	1.54	....	....	2.00	2.01	....	....
Corenco Ground Bone	Concord	2.00	2.22	23.00	29.37	....	....	....	....	....	....
Spurz-On	Concord	3.50	4.57	3.50	3.52	....	....	1.50	2.40	....	....
Corenco 4-12- 4	Lebanon	4.00	3.76	....	....	12.00	11.42	4.00	4.40	....	....
Corenco 5- 8- 7	Nashua	5.00	4.87	....	....	8.00	8.65	7.00	6.20	....	....
Corenco 5-10-10	Laconia	5.00	4.91	....	....	10.00	9.78	10.00	10.28	....	....
Corenco Peerless Potato 5-10-10	Lancaster	5.00	4.81	....	....	10.00	10.01	10.00	10.24	....	....
Corenco 5-10-10 with Water Soluble Mag. O.	Lebanon	5.00	4.89	....	....	10.00	10.12	10.00	10.24	2.00	3.30
Corenco 7-7-7	Nashua	7.00	7.09	....	....	7.00	7.28	7.00	7.28	....	....
Corenco Landscape Fertilizer 8-6-4	Concord	8.00	7.80	....	....	6.00	6.40	4.00	4.88	....	....
Corenco 8-12-16	Concord	8.00	7.90	....	....	12.00	12.21	16.00	16.56	....	....
Corenco Top-Dresser O-14-14	Lebanon	....	....	....	....	14.00	14.30	14.00	15.28	....	....
Corenco 20% Superphosphate	Concord	....	....	....	....	20.00	20.65	....	....	....	....
Davison Chemical Co. Baltimore, Maryland											
Davco Granulated Fertilizer 4-12-4	Manchester	4.00	4.21	....	....	12.00	12.42	4.00	4.08	....	....
Davco Granulated Fertilizer 5-8-7	Manchester	5.00	5.25	....	....	8.00	8.05	7.00	7.20	....	....
Davco Granulated Fertilizer 5-10-5	Manchester	5.00	4.40	....	....	10.00	9.15	5.00	4.28	....	....
Davco Granulated Fertilizer 5-10-10	Concord	5.00	5.03	....	....	10.00	9.51	10.00	9.12	....	....

Davco Granulated Fertilizer 7-7-7	Manchester	7.00	6.78	....	....	7.00	7.01	7.00	7.28	....	....
Davco Granulated Fertilizer 0-14-7	Manchester	....	....	....	....	14.00	14.32	7.00	8.00	....	....
Davco Granulated Fertilizer 0-14-14	Manchester	....	....	....	....	14.00	14.13	14.00	14.01	....	....
Davco Granulated Superphosphate 20%	Concord	....	....	....	....	20.00	21.22	....	....	....	....
E. I. DuPont de Nemours Co. Wilmington, Delaware											
DuPont Uramon Fertilizer Compound	Nashua	42.00	42.16	....	....	....	....	....	....	....	....
DuPont Nu Green Fertilizer	Manchester	44.00	44.27	....	....	....	....	....	....	....	....
Eastern States Farmers' Exchange, Inc. West Springfield, Massachusetts											
Eastern States 5-10-10	Manchester	5.00	5.45	....	....	10.00	10.07	10.00	10.96	....	....
Eastern States Fertilizer 5-15-10	Manchester	5.00	5.26	....	....	15.00	15.14	10.00	11.12	....	....
Eastern States Fertilizer 5-15-15	Manchester	5.00	5.60	....	....	15.00	14.08	15.00	15.04	....	....
Eastern States Fertilizer 8-16-16	Manchester	8.00	8.03	....	....	16.00	16.01	16.00	18.46	....	....
Eastern States Fertilizer 10-10-10	Manchester	10.00	9.49	....	....	10.00	11.98	10.00	10.08	....	....
Eastern States 0-19-19 with Borax	Woodsville	....	....	....	....	19.00	19.46	19.00	18.40	....	....
Eastern States Fertilizer 0-20-20	Manchester	....	....	....	....	20.00	20.45	20.00	20.32	....	....
Eastern States 20% Superphosphate Granulated	Manchester	....	....	....	....	20.00	21.34	....	....	....	....
Eastern States Muriate of Potash 60%	Manchester	...	....	....	....	....	....	60.00	61.22	....	....
Fox Point Chemical Company East Providence, Rhode Island											
Old Fox Brand 5-10-10	Walpole	5.00	5.17	....	....	10.00	9.88	10.00	10.32	....	....
Old Fox Brand Superphosphate 20%	Walpole	....	....	....	....	20.00	20.01	....	....	....	....
International Mineral and Chemical Company Woburn, Massachusetts											
International Sulphate of Ammonia	Colebrook	20.56	20.13	....	....	....	....	....	....	....	....
International Sheep Manure	Meredith	1.25	1.77	1.00	1.45	....	....	2.00	2.08	....	....
International Bone Meal	Manchester	2.47	2.25	23.00	28.62	....	....	....	....	....	....
International 4-12-8-1	Colebrook	4.00	4.05	....	....	12.00	12.01	8.00	8.16	1.00	1.55
International 4-12-16	Colebrook	4.00	3.18	....	....	12.00	12.12	16.00	15.36	....	....
International 5-8-7	Meredith	5.00	4.91	....	....	8.00	8.28	7.00	7.04	....	....
International 5-10-10	Meredith	5.00	5.02	....	....	10.00	10.08	10.00	10.16	....	....
International 5-10-10-2	Meredith	5.00	4.76	....	....	10.00	10.32	10.00	10.16	2.00	2.70
International 7-7-7-1	Meredith	7.00	7.09	....	....	7.00	7.04	7.00	7.20	1.00	1.22
International 8-6-2	Meredith	8.00	7.70	....	....	6.00	6.46	2.00	2.72	....	....
International 8-16-16	Colebrook	8.00	7.75	....	....	16.00	16.90	16.00	15.80	....	....
International 0-14-14	Meredith	....	....	....	....	14.00	14.10	14.00	14.40	....	....
International 0-20-20	Colebrook	....	....	....	....	20.00	20.15	20.00	20.32	....	....
International 20% Superphosphate	Manchester	....	....	....	....	20.00	20.37	....	....	....	....
International Muriate of Potash	Manchester	....	....	....	....	60.00	61.03	....	....	....	....
Merrimack Farmers' Exchange, Inc. Concord, New Hampshire											
Merrimack Brand Complete Manure 4-12-4	Concord	4.00	3.94	....	....	12.00	11.19	4.00	4.64	....	....
Merrimack Brand 4-12-16	Concord	4.00	4.40	....	....	12.00	12.17	16.00	16.80	....	....

	Sampled in	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Merrimack Brand 5-8-7	Concord	5.00	5.03	....	....	8.00	8.06	7.00	7.28	....	....
Merrimack Brand 5-10-10	Concord	5.00	4.92	....	....	10.00	10.01	10.00	10.08	....	....
Merrimack Brand 7-7-7	Concord	7.00	7.08	....	....	7.00	7.39	7.00	7.36	....	....
Merrimack Brand Top Dresser 0-14-14	Concord	....	....	....	....	14.00	14.04	14.00	15.26	....	....
Merrimack Brand 0-20-20	Concord	....	....	....	....	20.00	18.63	20.00	19.52	....	....
Norwood Brand Fertilizer Works North Reading, Massachusetts											
Norwood Brand Sheep Manure	Manchester	1.50	2.30	0.35	0.93	....	....	2.75	5.36	....	....
Norwood Brand Sheep Manure	Concord	1.83	2.27	....	....	0.89	0.91	1.03	3.36	....	....
Potash Company of America Carlsbad, New Mexico											
Muriate of Potash	Concord	....	....	....	....	....	....	60.00	61.16	....	....
Profile Fertilizer Company Manchester, New Hampshire											
Profile Sheep Manure	Manchester	1.20	1.60	0.20	0.39	0.10	0.35	2.22	4.56	....	....
Rogers & Hubbard Company Portland, Connecticut											
Hubbard High Potash Fertilizer 5-10-10	Nashua	5.00	5.25	....	....	10.00	10.84	10.00	10.64	....	....
Hubbard Top Dressing 7-7-7	Nashua	7.00	7.35	....	....	7.00	7.49	7.00	8.72	....	....
Hubbard Vegetable Fertilizer 5-8-7	Nashua	5.00	5.30	....	....	8.00	8.36	7.00	7.60	....	....
Red H 8-16-16	Nashua	8.00	8.30	....	....	16.00	16.38	16.00	16.08	....	....
Hubbard Muriate of Potash	Nashua	....	....	....	....	....	....	60.00	60.36	....	....
Sewerage Commission of City of Milwaukee Milwaukee, Wisconsin											
Milorganite 6-2-0	Nashua	6.00	6.03	2.00	3.38	....	....	....	....	....	....
Swift & Company Baltimore, Maryland											
Swift's Red Steer Plant Food 5-8-7	Manchester	5.00	4.66	....	....	8.00	8.19	7.00	6.32	....	....
Vigoro 5-10-5	Plymouth	5.00	5.18	....	....	10.00	10.02	5.00	5.20	....	....
Brimm 5-10-10	Concord	5.00	4.30	....	....	10.00	9.87	10.00	10.08	....	....
Red Steer Brand Plant Food 7-7-7	Concord	7.00	6.90	....	....	7.00	7.06	7.00	6.96	....	....
Tennessee Corporation Lockland, Ohio											
Loma 5-10-5	Nashua	5.00	4.89	....	....	10.00	10.18	5.00	4.84	....	....
Loma 8-8-8 Mineralized	Nashua	8.00	7.76	....	....	8.00	8.01	8.00	8.32	....	....
Walker Gordon Lab. Co. Plainsboro, New Jersey											
Boyung	Nashua	2.00	2.01	1.00	0.85	....	....	1.00	1.68	....	....